U.S. Environmental Protection Agency
Document Processing Desk (NOTIF)
Office of Pesticide Programs (7504P)
Room S4900, One Potomac Yard
2777 Crystal Drive Arlington, VA 22202

Attention:
Emily Schmid
Registration Division
Herbicide Branch

Subject: Submission of humidome analytical reports and a hooded sprayer report in support of the 2020 registration of XtendiMax® With VaporGrip® Technology (Alternate Brand Name: M1768 Herbicide), EPA Reg. No. 264-RERN

August 27, 2020

Steven T. Callen, Ph.D.

Bayer U.S.
Crop Science
Regulatory Affairs

700 Chesterfield Parkway West
Chesterfield, Missouri 63017
United States

Tel. +1 314 302 9391
steven.callen@bayer.com

www.bayer.com

Dear Emily Schmid,

In response to the 11 August 2020 submission of the Summary of the Relative Volatility of Dicamba Tank Mixes With and Without MON 51817 in the Humidome (MRID 51226801) by Bayer CropScience LP (Bayer), EPA requested that Bayer additionally provide the analytical reports associated with the studies and raw data presented in that report. To fulfill that request and in support of the 2020 registration of XtendiMax® With VaporGrip® Technology, Bayer herein provides five analytical reports from the humidome study assessing dicamba tank mixes with and without the addition of MON 51817 (VaporGrip® Xtra).

Additionally, in a meeting between EPA and Bayer on 20 August 2020, the EPA requested Bayer submit data evaluating the impact of hooded sprayers on off-target movement in support of Bayer's proposed hooded sprayer addition. To fulfill that request and in support of the 2020 registration of XtendiMax® With VaporGrip® Technology, Bayer herein provides the report "Spray Drift Deposition of Solutions Containing Dicamba formulation MON 54140 Using Different Application Technologies." A summary of that study, as well as of two published academic studies that evaluated hooded boom technology for controlling dicamba drift, is found below (see pp. 3-4).

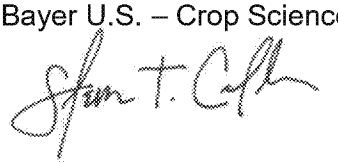
This application is being submitted electronically and contains the following documents:

- This cover letter
- Application for Pesticide Registration – EPA Form 8570-1
- Public Data Matrix (8570-35)
- Agency Data Matrix (8570-35)
- Transmittal Document
- *Report*: Spray Drift Deposition of Solutions Containing Dicamba formulation MON 54140 Using Different Application Technologies; MRID No. **51242201**
- *Humidome Analytical Report*: Evaluation of Relative Volatility of XtendiMax® With VaporGrip® Technology Tank Mixes – Standard Testing – May 2020, Week 3; MRID No. **51242202**
- *Humidome Analytical Report*: Evaluation of Relative Volatility of XtendiMax® With VaporGrip® Technology Tank Mixes – Standard Testing – June 2020, Week 2; MRID No. **51242203**
- *Humidome Analytical Report*: Evaluation of Relative Volatility of XtendiMax® With VaporGrip® Technology Tank Mixes – Standard Testing – June 2020, Week 3; MRID No. **51242204**
- *Humidome Analytical Report*: Evaluation of Relative Volatility of XtendiMax® With VaporGrip® Technology Tank Mixes – Standard Testing – June 2020, Week 4; MRID No. **51242205**
- *Humidome Analytical Report*: Evaluation of Relative Volatility of XtendiMax® With VaporGrip® Technology Tank Mixes – Standard Testing – July 2020, Week 5; MRID No. **51242206**

Should you require any additional information or have any questions or concerns regarding this submission, please contact me (contact information on page 1) or George Sabbagh in our Washington D.C. office at (913) 231-6291 or george.sabbagh@bayer.com.

Sincerely,

Bayer U.S. – Crop Science



Steven T. Callen, Ph.D.
Federal Regulatory Manager

Summary of Bayer and Published Academic Studies on Hooded Sprayers

Dicamba Spray Drift Potential Can Be Effectively Controlled Using Hooded Boom Sprayer and Ultra-Coarse Nozzles

Bayer conducted a spray drift trial in Texas on a bareground field following U.S. EPA test guideline 840.1200. The study was conducted to evaluate the efficacy of two spray drift reduction technologies (Hooded Sprayer and Pattern Master). This submission pertains to the hooded sprayer results only, since pattern master technology failed to substantially reduce drift.

The hooded sprayer portion of the study evaluated the drift of dicamba (1 lb a.e./acre) with and without a drift reducing adjuvant (DRA) at two nominal wind speeds (< 10 mph, ≥ 10 mph) for three spray qualities (medium, coarse, ultra-coarse). The combination of two treatments, two wind speeds, and three spray quality resulted in 12 spray applications. Spray drift was collected for each application on filter paper samplers placed at distances ranging from 4 m to 120 m from the edge of the sprayed field. Dicamba was analyzed on each filter paper and those results were then compared against U.S. EPA end-point of 0.026% of applied to calculate a buffer distance.

Eight of the twelve spray applications resulted in either a 0-ft buffer distance or deposition too small to fit a deposition curve. In the latter case, the buffer distance was designated as <4-m. The remaining four applications resulted in 0.7 m (coarse, 9.4 mph, DRA), 2.5 m (medium, 6.5 mph, No DRA), 3.4 m (coarse, 12.3 mph, No DRA), and 6.7 m (medium, 17.4 mph, No DRA). All ultra-coarse spray applications resulted in negligible spray depositions (<4-m buffer). Overall, the results indicate that the hooded sprayer was successful in mitigating dicamba spray drift.

Academic Studies Confirm Effectiveness of Hooded Boom Sprayer Technology

While the Bayer study was specific to dicamba spray drift for three spray qualities, there are examples in the peer-reviewed literature that demonstrate the effectiveness of the hooded sprayers for other herbicides and spray qualities. Results from two academic-led peer-reviewed papers are summarized below.

Henry et al. (2014)[1] conducted six spray applications with and without the hooded boom for three spray qualities (fine, coarse, ultra-coarse). Spray solution contained glyphosate, AMS and a rhodamine dye. Spray application were repeated in 2012 and 2013. The authors noted issues in the 2012 spray applications due to incorrect orientation of spray nozzle and hence are not summarized here. Wind speeds during the 2013 spray application ranged from 7 mph to 9 mph.

[1] Henry, R. S., S. Claussen, and G. R. Kruger. 2014. A comparison of an unhooded and hooded spray for pesticide drift reduction. 2014. *J. Agric. Eng.* 1(1):43-51

The 2013 results indicate that the hooded sprayer resulted in no spray drift beyond 8 m from the field edge for all three spray qualities.

Foster et al. (2018)[2] conducted a similar spray drift trial with a hooded boom while testing four spray qualities (fine, medium, very-coarse, and ultra-coarse). Unfortunately, the tabular data in this paper is presented in relative terms (i.e. relative to fine spray and no hood) which makes it difficult to assess the absolute effectiveness of the hooded sprayers. However, Figure 2 in the paper illustrates the hooded sprayer was able to control drift at about 6 m from the field edge for all four spray qualities. Although the authors concluded that ultra-coarse hooded sprays were not statistically different from no hood sprays, Figure 2 shows there is clearly less spray at all distances with the hooded sprayer, which is consistent with the authors conclusion of reduced drift from hooded sprayers at further distances.

[2] Foster, H. C., B. P. Sperry, D. B. Reynolds, G. R. Kruger, and S. Claussen. 2018. Reducing herbicide particle drift: effect of hooded sprayer and spray quality. *Weed. Technol.* 32:714-721